

09/775274 1/31/01
detailed description of an example aggregation algorithm is provided in co-pending application Ser. No. ~~NUMBER~~, filed ~~DATE~~, entitled "Method and Apparatus for Call Aggregation," by named inventors S. Mohaban et al., attorney docket number 60002-505, the entire contents of which is hereby incorporated by reference as if fully set forth herein.

- 5 Using RTP aggregation application 414, VoIP processor 300 causes a substantial bandwidth reduction, while improving other aspects of the network behavior, such as reducing the load on routers and improving the behavior of queues.

In one embodiment, RTP aggregation application 414 ensures a prescribed limit on the induced latency. For example, RTP streams are partitioned based on certain criteria including the destination subnet of the RTP stream, and the codec of the RTP stream. When the first packet of a trunk arrives at VoIP processor 300, a timer may be started. The timer is set to expire at an allowed maximum value of latency. The allowed maximum value of latency may be user-selected. As packets continue to arrive at VoIP processor 300, the packets are aggregated either when the number of packets reach a pre-selected number or
15 when the timer expires.

Applications that work on multiple voice sessions simultaneously often get more effective as the number of concurrent calls gets larger. In the case of call aggregation, the larger the number of calls sharing a common network sub-route, the better the bandwidth utilization that can be achieved. By aggregating calls originating from multiple endpoints (gateways and IP phones) the call aggregation application on the VoIP processor improves the ability to aggregate more calls. For example, in case of IP phones, aggregation simply is not applicable on a single phone. However, the calls from several IP phones may be aggregated by the call aggregation application running on a VoIP processor.

3.3.1.2 APPLICATION LEVEL CALL ROUTING

25 In a past approach, VoIP equipment, such as gateways and IP phones, blindly relies on the IP infrastructure for connectivity. While this approach performs well for traditional, non-real-time traffic, conventional IP routing has many shortcomings that arise in transport